UNITED
NATIONS

A

General Assembly

Distr.
LIMITED

A/CONF.151/PC/WG.I/L.47
30 March 1992

ORIGINAL: ENGLISH

PREPARATORY COMMITTEE FOR THE
UNITED NATIONS CONFERENCE ON
ENVIRONMENT AND DEVELOPMENT
Fourth session
New York, 2 March-3 April 1992
Working Group I
Agenda item 2

PROTECTION OF THE ATMOSPHERE

Text submitted by the Chairman on the basis of negotiations held on document A/CONF.151/PC/100/Add.14

(Section II, chapter 1, of Agenda 21)

BACKGROUND

The atmosphere component of Agenda-21 should be flexible and evolving. The Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC) is addressing many of the issues contained in the following text. In so far as the following proposals refer to climate-related activities discussed by the INC, they should not pre-empt, duplicate or be interpreted as prejudging the INC negotiations concerning questions that may arise and be discussed there, such as general objectives and commitments, standards, conditionality, institutional arrangements and mechanisms for funding incremental costs. Negotiations on this chapter of Agenda 21, therefore, will have to take account of the state of negotiations on the framework convention on climate change.

Similarly, the following text, in so far as it relates to combating the depletion of the ozone layer, should not pre-empt or prejudge the deliberations within the Montreal Protocol process. Negotiations of this text by the Preparatory Committee will have to take account of the status of obligations under the Montreal Protocol and its 1990 amendments.

INTRODUCTION

1. [An overall objective in this area is to achieve the early entry into force of the framework convention on climate change and its related instruments that might be agreed upon, with the widest possible participation, and to pursue [energy and other] relevant [policies]/[and programmes] which will contribute to the achievement of the objectives of that convention. (NOTE: The final language of this paragraph will be dependent on the outcome of the INC.)

2. The present chapter includes four programme areas:

A. Addressing the uncertainties: improving the scientific basis for decision-making;

B. Promoting sustainable development:

1. Energy development, efficiency and consumption;

2. Transportation;

3. Industrial development;

4. Terrestrial and marine resource development and land use;

C. Stratospheric ozone depletion: implications and response strategies;

D. Transboundary atmospheric pollution.

PROGRAMME AREAS

A. Addressing the uncertainties: improving the scientific basis for decision-making

Basis for action

3. Substantial knowledge of the environmental and development issues related to the atmosphere has been gained. However, concern over climate change and climate variability, air pollution and ozone depletion has created new demands for scientific and economic information. Better understanding and prediction of physical, chemical and biological properties of the atmosphere and of the affected ecosystems, as well as health impacts and their interactions with socio-economic factors are needed.

Objectives

4. The objectives of this programme area are:

(a) To improve the understanding of the processes that influence and are influenced by the Earth's atmosphere on a global, regional and local scale,

including, inter alia, physical, chemical, geological, biological, oceanic, hydrological, economic and social processes; and to reduce uncertainties with regard to the economic and social consequences of response measures taken in this regard;

(b) To develop, maintain and, where appropriate, enhance systematic observations of the atmosphere and affected ecosystems, as well as impacts on human health and social and economic systems. The emphasis should be on assembling coincident and supportive databases, where possible, and on exchanging these data and related information to the fullest extent possible;

(c) To enhance international cooperation in building the capacities and abilities of countries to identify atmospheric problems, to conduct research, to assemble, collect and assess data by using existing data and by establishing and expanding systematic observation capabilities, and to participate in the exchange of the resulting data and information.

Activities

5. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Identify priority areas of scientific, technical and socio-economic research related to the critical linkages between the environmental and development issues arising in all sectors, as they relate to the atmosphere, with the support of relevant United Nations bodies, regional and subregional organizations, industry, research institutions and other non-governmental organizations;

(b) Promote studies on issues concerning the interaction between socio-economic parameters and atmospheric changes, such as climate change, enhanced ultraviolet radiation and increase in various air pollutants, as they relate to various ecosystems; oceans and all seas and their surface layers; economic sectors, especially at the regional and local levels; soils; and biodiversity in general;

(c) Ensure a more balanced geographical coverage of the Global Atmosphere Watch network by facilitating, inter alia, the establishment and operation of additional systematic observation stations and by contributing to the development, utilization and accessibility of the Global Atmosphere Watch database;

(d) Promote cooperation in the development of early detection systems concerning changes in the atmosphere, both those resulting from human activities and others;

(e) Invite the Intergovernmental Panel on Climate Change (IPCC) to examine the feasibility of, and where appropriate, develop scientifically credible methodologies for identifying critical loads for greenhouse gas emissions;

(f) Cooperate in facilitating the participation and training of experts and technical staff, particularly of developing countries, in the fields of research, data assembly, collection and assessment, and systematic observation related to the atmosphere;

(g) Promote the exchange of data and information, including those related to national, subregional and regional experiences for air pollution control;

(h) Maintain, enhance or establish the capability to predict atmospheric changes and fluctuations and to assess the resulting environmental consequences and socio-economic impacts.

B. Promoting sustainable development

1. Energy development, efficiency and consumption

Basis for action

6. Much of the world's energy is produced and used in ways that could not be sustained if technology were to remain constant and if overall quantities were to increase substantially. This is particularly true in so far as atmospheric emissions are concerned. The international community must continually strive for energy development paths that are increasingly [safe and] sound environmentally and economically efficient. This will require reliance on environmentally [safe and] sound energy systems, increasingly based on efficiency in energy production, transmission, distribution and consumption, as well as on the use of [new and] renewable sources of energy. All energy sources will need to be used in ways that respect the atmosphere and the environment as a whole.

7. The existing constraints to increasing the energy supplies required for pursuing the path towards sustainable development, particularly in developing countries, need to be removed.

Objectives

8. The objectives of this programme are:

(a) As a long-term objective, to adopt methods and techniques that move away from present polluting and wasteful energy production and consumption patterns. [This is closely linked to the goal of diminishing current adverse effects on the atmosphere.] The new energy systems should be environmentally [safe and] sound, and increasingly based on efficiency in energy production,

transmission, distribution and consumption, as well as on the use of [new and] renewable sources of energy;

(b) To promote efficiency in energy production, transmission, distribution and use;

(c) To promote the use of efficient and less polluting technologies in the production and consumption of energy from fossil fuels, from [new and] renewable sources of energy and other conventional sources, which will remain important;

(d) To increase the contribution of environmentally [safe and] sound energy systems to the energy supply and consumption mix, in particular through the promotion, distribution and development of renewable sources of energy;

(e) To promote and enhance adequate and equitable energy availability in economically viable and environmentally [safe and] sound ways to respond to the increasing energy needs for sustainable economic and social development, particularly in developing countries;

(f) To cooperate to undertake the necessary technical, research, development and adaptation measures to support a transition to environmentally [safe and] sound energy systems. Special consideration will need to be given to countries heavily dependent on the production, export and consumption of fossil fuels to ensure that the transition does not adversely affect their development.

Activities

9. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Cooperate in identifying and developing energy sources to promote the availability of increased energy supplies, to support sustainable development efforts, in particular in developing countries;

(b) Cooperate in the development of appropriate methodologies for making integrated energy, environment and economic policy decisions in a sustainable and a long-term framework, while supporting efforts to carry out environmental impact assessments of relevant policy decisions and projects. Planning and implementation of energy efficiency should as much as possible be adapted by countries, taking into account regional and subregional energy strategies, where appropriate;

(c) Promote the transfer, development and use of improved energy-efficient technologies, including indigenous technologies, in all relevant sectors, giving special attention to renewable sources of energy and the rehabilitation and modernization of power systems, through capacity-building and management, particularly in developing countries;

(d) [Study and develop economic instruments, which may play an important role in achieving structural changes and improved efficiency in the production and consumption of energy;]

(e) Review current energy supply mixes to determine how the contribution of environmentally [safe and] sound energy systems as a whole, particularly [new and] renewable energy systems could be increased in an economically efficient manner, taking into account respective countries' unique social, physical, economic and political characteristics[, including measures that would ensure that [new and] renewable energy sources are not discriminated against in domestic energy markets];

(f) Coordinate energy plans regionally and subregionally, where applicable, and study the feasibility of efficient distribution of energy from [new and] renewable energy sources;

(g) To consider, with a view to increasing research, development and the introduction of environmentally [safe and] sound energy systems, particularly for renewable energy sources and to promote research and development, particularly in developing countries;

(h) Cooperate to increase the availability of capacity, capabilities and relevant technologies - recognizing that technology includes biotechnology - in developing countries for utilizing and producing environmentally sound renewable energy resources, such as solar, wind, geothermal, hydropower and biomass, including woodfuel resources. Each should be utilized in a manner that fosters sustainable development and minimizes environmental stress and health impacts, emphasizing the need for easily available, cleaner burning, smoke-free household fuel;

(i) [Develop sustainable energy policies [programmes] in order to improve energy efficiency by, inter alia:

(i) Formulating, in cooperation with the private sector, appropriate objectives or policies relating to energy production and consumption;

(ii) Promoting application of economic instruments with a view to taking into account environmental and other social costs while encouraging greater efficiency;

(iii) Building capacity for energy planning and programme management in energy efficiency, including the introduction, development and management of [new and] renewable sources of energy;]

(j) [Strengthen existing and/or set new energy efficiency and emission standards or recommendations on specific technologies, as appropriate. Countries may wish to coordinate these standards or recommendations at regional and subregional levels. Such standards or recommendations should provide ongoing incentives for more efficient and less polluting energy use, with special attention being paid to the promotion of the development and use of alternative and less polluting technologies;]

(k) Encourage education and awareness-raising programmes at the local, national, subregional and regional levels concerning energy efficiency and environmentally [safe and] sound energy systems;

(l) Establish or enhance, as appropriate, in cooperation with the private sector, labelling programmes for products to provide decision makers and consumers with information on opportunities for energy efficiency.

2. Transportation

Basis for action

10. The transport sector is a source of atmospheric emissions. With increasing economic development there will be consequent increases in transportation needs, which could be accompanied by related emissions, unless appropriate action is taken. There is need for a review of existing transport systems, involving vehicle emissions, the reorientation and management of traffic and transport systems, and infrastructural issues, including land use and urban planning.

Objectives

11. The objectives of this programme are:

(a) To develop and promote programmes and strategies to limit and reduce, as appropriate, emissions of pollutants into the atmosphere and other adverse environmental effects of the transport sector, taking into account development priorities, as well as the specific local and national circumstances and safety aspects;

(b) To plan and develop more efficient and less polluting transportation systems, especially mass transit, to support economic development efforts in an environmentally [safe and] sound way, giving special attention to urban and metropolitan areas.

Activities

12. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Develop and promote more efficient and less polluting transport systems, particularly integrated rural and urban mass transit, as well as environmentally sound road networks, taking into account the needs for sustainable social and economic development, particularly in developing countries;

(b) Facilitate at the international, regional subregional and national levels [cooperation related to] the transfer of safe, energy-efficient and less polluting transport technologies, particularly to the developing countries, including the implementation of appropriate training programmes;

(c) Strengthen, as appropriate, their efforts at collecting, analysing and exchanging relevant information on the relation between environment and transport. Particular attention needs to be given to systematic observation of emissions and to the development of a transport database, including information on the types and numbers of vehicles, fuel types [and pricing] and pollution controls;

(d) With the aim of enhancing and developing environmentally sustainable transportation systems, evaluate and, as appropriate, promote economic mechanisms, including pricing, which, inter alia seek to discourage large, fuel-consuming and polluting vehicles, and encourage the development and use of alternative fuels;

(e) Develop or enhance, as appropriate, mechanisms to integrate the transport planning strategies and urban and regional settlement planning strategies, with the aim of reducing additional needs for transport;

(f) Study, within the framework of the United Nations and appropriate international bodies, the feasibility of convening regional conferences on transport and the environment and their scope; such conferences could involve governmental representation and relevant international organizations, as well as the private sector and relevant academic institutions.

3. Industrial development

Basis for action

13. Industry is essential for the production of goods and services and is a major source of employment and income, and industrial development as such is essential for economic growth. At the same time, industry is a major energy user and consequently results in emissions into the atmosphere and the environment as a whole. Protection of the atmosphere can be enhanced, inter alia, by increasing energy efficiency in industry, installing or improving pollution abatement technologies and replacing CFCs and other ozone-depleting substances with appropriate substitutes, as well as by promoting and implementing practices based on recycling and reducing wastes and by-products.

Objectives

14. The objectives of this programme are:

(a) To increase countries' capacities to undertake industrial development efforts in an environmentally [safe and] sound manner to support their development objectives;

(b) To increase efficiency in the production and consumption by industry of [energy and other] resources and materials;

(c) To improve pollution-abatement technologies, develop new, environmentally [safe and] sound technologies and facilitate [cooperation related to] the transfer of those technologies by inter alia, supporting and implementing relevant international agreements, as appropriate.

Activities

15. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Encourage industry to increase and strengthen its capacity to develop products and processes that are more energy-efficient, safe and environmentally sound;

(b) Develop, improve and apply environmental impact assessments to foster sustainable industrial development;

(c) Alternative A:

[Support initiatives promoting clean and more efficient technologies and processes in industries with a view to limiting industrial pollution;]

Alternative B:

[Promote programmes and practices that encourage sustainable industrial development, technologies and processes, taking into account area-specific accessible potentials for energy, particularly safe and renewable sources of energy, with a view to limiting industrial pollution;]

(d) [Continue research and other work aimed at developing methodologies and criteria for incorporating the social costs of the environmental impacts caused by industrial production, as well as the treatment and disposal of wastes generated, into the prices of the final products;]

(e) [Promote efficient use of materials and resources, taking into account all aspects related to cycles of production and consumption, including reuse, recycling, recovery and disposal.]

4. Terrestrial and marine resource development and land use

Basis for action

16. Land-use and resource policies will both affect and be affected by changes in the atmosphere. Certain practices related to terrestrial and marine resources and land use can decrease greenhouse gas sinks and increase atmospheric emissions. The loss of biological diversity may reduce the resilience of ecosystems to climatic variations and air pollution damage. Atmospheric changes can have important impacts on forests, biodiversity, and freshwater and marine ecosystems, as well as on economic activities, such as agriculture. Policy objectives in different sectors may often diverge and will need to be handled in an integrated manner.

Objectives

17. The objectives of this programme are:

(a) To promote terrestrial and marine resource utilization and land-use practices that contribute to:

(i) Reducing atmospheric pollution or limiting anthropogenic emissions of greenhouse gases;

(ii) The conservation, sustainable management and enhancement, where appropriate, of all sinks for greenhouse gases;

(iii) The conservation and sustainable use of natural and environmental resources;

(b) To ensure that actual and potential atmospheric changes and their socio-economic and ecological impacts are fully taken into account in planning and implementing policies and programmes concerning terrestrial and marine resources utilization and land-use practices.

Activities

18. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Implement policies and programmes that will discourage inappropriate and polluting land-use practices and promote sustainable utilization of terrestrial and marine resources and environmentally sound land-use practices;

(b) [Consider promoting the development and use of terrestrial and marine resources and land-use practices that will be more resilient to atmospheric changes and fluctuations.]

C. Preventing stratospheric ozone depletion

Basis for action

19. Analysis of recent scientific data has confirmed the growing concern over the continuing depletion of the Earth's stratospheric ozone layer by reactive chlorine and bromine from man-made chlorofluorocarbons (CFCs), halons and related substances. While the 1985 Vienna Convention for the Protection of the Ozone Layer and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (as amended in London in 1990) were important steps in international action, the total chlorine loading of the atmosphere of ozone-depleting substances has continued to rise. This can be changed through compliance with the control measures identified within the Protocol.

Objectives

20. The objectives of this programme area are:

(a) To realize the objectives defined in the Vienna Convention and the Montreal Protocol and its 1990 amendments, including the consideration in those instruments of the special needs and conditions of the developing countries and the availability to them of alternatives to substances that deplete the ozone layer. Technologies and natural products that reduce demand for these substances should be encouraged;

(b) To develop strategies aimed at mitigating the adverse effects of ultraviolet radiation reaching the Earth's surface as a consequence of depletion and modification of the stratospheric ozone layer.

Activities

21. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Ratify, accept or approve the Montreal Protocol and its 1990 amendments; pay their contributions towards the Vienna/Montreal trust funds and the interim multilateral ozone fund promptly; and contribute as appropriate, towards ongoing efforts under the Montreal Protocol and its implementing mechanisms, including making available substitutes for CFCs and other ozone-depleting substances and facilitating the transfer of the corresponding technologies to developing countries in order to enable them to comply with the obligations of the protocol;

(b) Support further expansion of the Global Ozone Observing System by facilitating - through bilateral and multilateral funding - the establishment and operation of additional systematic observation stations, especially in the tropical belt in the southern hemisphere; participate actively in the continuous assessment of scientific information and the health and

environmental effects, as well as of the technological/economic implications of stratospheric ozone depletion; and consider further actions that prove warranted and feasible on the basis of these assessments;

(c) Based on the results of research on the effects of the additional ultraviolet radiation reaching the Earth's surface, in the fields of human health, agriculture and marine environment, [States and international organizations should] consider taking appropriate remedial measures;

(d) Alternative A:

[Replace CFCs and other ozone-depleting substances, consistent with the Montreal Protocol, recognizing that a replacement's suitability should be evaluated holistically and not simply based on its contribution to solving one atmospheric or environmental problem;]

Alternative B:

[Replace CFCs and other ozone-depleting substances with appropriate substitutes that do not deplete the ozone layer, or do so to a significantly lesser degree. Preference should be given to substitutes that are not greenhouse gases.]

D. Transboundary atmospheric pollution

Basis for action

22. Transboundary air pollution has adverse health impacts on humans and other detrimental environmental impacts, such as tree and forest loss and the acidification of water bodies. The geographical distribution of atmospheric pollution monitoring networks is uneven, with the developing countries severely underrepresented. The lack of reliable emissions data outside Europe and North America is a major constraint to controlling transboundary air pollution. There is also insufficient information on the environmental and health effects of air pollution in other regions.

23. The 1979 Economic Commission for Europe Convention on Long-range Transboundary Air Pollution has established a regional regime in Europe and North America, based on a review process and cooperative programmes for air pollution monitoring, assessment and information exchange. These programmes need to be continued and enhanced, and their experience needs to be shared with other regions of the world.

Objectives

24. The objectives of this programme area are:

(a) To develop and apply pollution control and measurement technologies for stationary and mobile sources of air pollution and to develop alternative environmentally [safe and] sound technologies;

(b) To observe and assess systematically the sources and extent of transboundary air pollution resulting from natural processes and anthropogenic activities;

(c) To strengthen the capabilities, particularly of developing countries, to measure, model and assess the fate and impacts of transboundary air pollution, through, inter alia, exchange of information and training of experts;

(d) To develop capabilities to assess and mitigate transboundary air pollution resulting from industrial [and nuclear] accidents, natural disasters and the deliberate and/or accidental destruction of natural resources;

(e) To encourage the establishment of new and the implementation of existing regional agreements for limiting transboundary air pollution;

(f) To develop strategies aiming at the reduction of emissions causing transboundary air pollution and their effects.

Activities

25. Governments [and regional economic integration organizations] at the appropriate level, with the cooperation of the relevant United Nations bodies and, as appropriate, intergovernmental and non-governmental organizations, the private sector and financial institutions, should:

(a) Establish and/or strengthen regional agreements for transboundary air pollution control and cooperate, particularly with developing countries, in the areas of systematic observations and assessment, modelling and the development and exchange of emission control technologies of mobile and stationary sources of air pollution. In this context, greater emphasis should be put on addressing the extent, causes, health and socio-economic impacts of ultraviolet radiation, acidification of the environment and photo oxidant damage to forests and other vegetation;

(b) Establish or strengthen early warning systems and response mechanisms for transboundary air pollution resulting from industrial accidents and natural disasters and the deliberate and/or accidental destruction of natural resources;

(c) Facilitate training opportunities and exchange of data, information and national and/or regional experiences;

(d) Cooperate on regional, multilateral and bilateral bases to assess transboundary air pollution, and elaborate and implement programmes identifying specific actions to reduce atmospheric emissions and to address their environmental, economic, social and other effects.

Means of implementation

(a) Financial and cost-evaluation

[26. The major financial implications for programme area A (Addressing the uncertainties: improving the scientific basis for decision-making) would be for additional systematic observation and assessment of atmosphere-related issues. These are assessed in more detail in section IV, chapter 9 of Agenda 21. It is estimated that $675 million per year will be needed in international financing for developing country programmes, as follows:

(a) Additional monitoring and assessments for these global issues in developing countries will cost on the average about $640 million per year, all of which will need to come from international sources;

(b) The early detection system will require $5 million annually from international sources; strengthening regional monitoring activities and international coordination of these will cost about $30 million per year.

27. The major financial implications of programme area B (Promoting sustainable development) are as follows:

(a) During the 1990s, the total developing country energy investment requirements are expected to rise to $120 billion per year. In order to keep the same percentage of the energy investments from international sources, at least $4-$4.5 billion per year will be required for the developing countries only. About $3.5 billion are being covered from international sources at present, representing about 3-4 per cent of total investment requirements. Were this to double, annual requirements would be on the order of $9 billion;

(b) To ensure that more efficient energy systems and renewable energy sources would be used in developing countries, thereby ensuring reduced carbon dioxide emissions, an additional sum of about $5 billion would be required from the international community. These are issues that relate directly to climate change, as both efficiency increases and alternative fuel supplies result in lower greenhouse gas emissions. Consequently, these are issues that are at present being negotiated within the Intergovernmental Negotiating Committee on a Framework Convention for Climate Change, and any decision within Agenda 21 will need to be adjusted in accordance with the outcome of those negotiations;

(c) Finally, to ensure environmentally sound energy development, up to $1 billion per year would be required from international sources;

(d) The approximately $10 billion needed from the international community for implementing this programme area would be divided about equally between funds for accelerating development and those needed for global issues;

(e) The national costs of promoting mass transit, as well as fuel efficiency and vehicle emission standards, are likely to be negative over time. Nevertheless, initial capital investments will be required, over and above existing plans. The magnitude of these funds will also need to be determined through the proposed regional conferences;

(f) In the area of industry, the major costs involved for developing countries will be for the development or purchase and management of new and cleaner industrial production technologies, in addition to the energy efficiency measures for industry, already covered in programme area B.1. Of particular interest is the increased cost of licensing newer, more efficient and less polluting industrial technologies. It is not possible to give an overall figure for the financial needs for these. However, since the activities to be undertaken in this area are similar to those for energy efficiency and for pollution abatement, it is possible to estimate that total requirements will be an additional $25 billion per year, of which 3-10 per cent or $1-$2 billion per year could come from international sources during the 1990s. Were the percentage of international contributions to double, the requirements would be $2-$4 billion per year;

(g) In the area of terrestrial and marine resource development and land use, most of the activities proposed are activities that are being dealt with in other programme areas. The difference is that the objectives, and consequently the implementation, should shift in ways that take into account expected atmospheric changes. The extra cost to the international community of developing new crop varieties and agricultural practices that will be more resilient to atmospheric changes may be an additional $100 million per year. It should be possible to absorb the additional cost for the coordination of efforts at the national and the international levels within existing budgets.

28. The annual costs to the international community for phasing out ozone-depleting substances by the year 2000 are estimated in the range of $160-$590 million per year. These are funds needed in addition to those already made available under the Montreal Protocol. Annual costs for the WMO Global Ozone Observing System, including the establishment of additional monitoring stations, will be less than $1 million per year.

29. Technical assistance and pilot programmes related to transboundary air pollution efforts will cost about $2 million annually.]

(b) Scientific and technological means

30. Developed countries should cooperate, in particular with developing countries to enable them to acquire or develop the relevant new, energy efficient and less polluting technologies, practices and policies. (Language to be supplemented following agreement on "Technology transfer, etc.").

(c) Institutional means

31. Changes to existing and new institutional mechanisms of technical and financial assistance may be needed at national, regional and global levels. There is particularly urgent need for work in the areas of energy efficiency and environmentally sound energy systems, especially renewable sources.

(i) National level

32. At the national level most countries have appropriate institutions dealing with energy. Their mandates, however, need to be considerably expanded to include responsibilities for the social and environmental impacts caused by the energy systems and to fully integrate the energy needs of the rural sector. Countries need to ensure the intersectoral collaboration of agricultural, forestry and rural development authorities for the latter.

(ii) Regional and subregional level

33. Regional and subregional institutions exist in a number of areas and are undertaking regional energy-related work. Some of these are within regional economic commissions, and others are regional, intergovernmental organizations. The work of these regional and subregional bodies needs to be strengthened, and other regional energy bodies may need to be set up to ensure that all the activities of a regional character of this programme area can be undertaken by them, particularly the regional energy efficiency activities that are being proposed above.

(iii) Global level

34. In addition to strengthening existing and creating new regional institutions, a global level institutional response will also be required. There is, at present no lead agency responsible for the whole range of energy issues within the United Nations.

35. United Nations collaborating centres. Collaborating centres could be set up by relevant United Nations bodies, with existing or new governmental or non-governmental institutions, at the regional or global level, to assist countries and United Nations agencies in implementing environmentally sound energy activities.

36. Review of public financial institutions. Countries should ensure that public financial institutions at the national and international levels review their programmes to determine the extent to which they are contributing to or are promoting investments that encourage the use of environmentally [safe and] sound energy systems and thereby better serve environmental and developmental objectives.

(d) Capacity-building

37. Countries, in cooperation with the relevant United Nations bodies, international donors and non-governmental organizations, should mobilize technical and financial resources and facilitate technical cooperation with developing countries to reinforce their technical, managerial, planning and administrative capacities to promote sustainable development, through energy development, efficiency, and consumption, transportation, industrial development, and terrestrial and marine resource development and land use.

(e) Human resource development

38. Education and awareness-raising programmes need to be introduced and strengthened at the local, national and international levels concerning the promotion of sustainable development through energy development, efficiency and consumption, transportation, industrial development, and terrestrial and marine resource development and land use.